Interspecific Competition in Butterflies

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I refer to Dr Luckens' short paper under this heading (1974, *Entomologist's Record*, **86**: 71-72) and to his last paragraph in particular. I am always troubled when a situation exists for which there appears to be no rational explanation. Dr Luckens (1971, *Entomologist's Record*, **83**: 261-262) refers to *Argynnis aglaia* L. displacing *A. cydippe* L. "by natural competition". Baron de Worms (1972, *Entomologist's Record*, **84**: 219-223) writes of *Papilio andraemon* Hbn. displacing "several other species of Papilio in some regions of the island (i.e. Jamaica) as the larvae infest citrus trees". I simply pose the very ordinary question "How?" Surely this is the basis of all science.

Dr Luckens' suggestion of the need for *lebensraum* does not satisfy me. In my garden in Calcutta three species of citrus-feeding *Papilio* were present—*polytes* L., *demoleus* L. and *polymnestor* Cr. — the two former common, the latter rare, but there was no sign of one displacing another. Here in East Africa the same situation exists, in my garden there are three citrus-feeding *Papilio—demodocus* Esp. (common), *niraeus* L. (uncommon) and *dardanus* Brown (rare); in a patch of forest in the Shimba Hills the above three species are equally common with two others, *ophidicephalus* Ob. and *constantinus* Ward, rather less so. These Rutaceae-feeding Papilios are not aggressive either towards their own kind or to other butterflies, and if three or four species can co-exist peacefully in India and Kenya, why should *andraemon* displace its congeners in Jamaica?

There are butterflies that do appear to require *lebensraum*, to use Dr Luckens' term, many of the *Charaxes* like to settle on a commanding twig and from there launch attacks on other passing butterflies, but here again my garden harbours five species, and the patch of Shimba Hills forest at least nine, of comparable size and habits, although they do not all have the same food-plant.

I can, however, put forward a possible explanation for the displacement of the native American *Pieris napi* L. and *P. protodice* Bsd. & Lec. by the introduced *P. rapae* L. It is true that all feed on various species of Cruciferae, but Bowden's experiments in hybridising would appear to indicate that the American species, at any rate, have very definite preferences. If the introduced *rapae* emerge a little earlier than the native species, possibly lay more eggs, have fewer parasites (at the beginning at any rate), and have a wider range of food-plant, a situation could easily arise where the native species had its preferred food-plant much reduced, or even wiped out, by the more prolific and earlier emerging introduction, which would continue to thrive on food-plants unacceptable to the native species.